

CONTENT ACCESS CONTROL

FIELD OF THE INVENTION

The present invention relates to control of access to content (e.g., audio data and/or video data).

BACKGROUND OF THE INVENTION

Content-provision systems, such cable TV, satellite TV, video-on-demand (VOD), pay-per-view (PPV), and/or Web-based systems offer an enormous selection of video programs containing various types of substantive content, some of which may not be suitable for certain users, such as a child viewer.

SUMMARY

To prevent inappropriate or undesirable programs from being viewed, "parental controls" may, for example, act to "filter" the content received from the content provider. Parental controls may block content (e.g., audio and/or video data) based on a variety of content characteristics. For example, parental controls may content, such as video and/or audio programs, encoded with particular ratings information, such as R and X under the MPAA (Motion Picture Association of America) ratings system. Or, for example, the parental controls may block content encoded with particular content indicators, such as "adult language," "violence," and "nudity." Or, for example, the parental controls may block content based on a particular channel and/or from a particular source.

However, various users, for example, viewers of content may share a content player system, such as a computer or a television with a set top box. Each of these viewers may have various different tastes and sensitivities with respect to subject matter of video programs.

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Parental controls may allow separate filtering criteria to be defined for each viewer (e.g., one for children, one for teenagers, and one for adults). Each viewer's filtering criteria may be activated upon entering an identifier associated with that user and/or with that user's criteria. Thus, for example, if a user enters an identifier associated with criteria for children's programs, only programs suitable for a child are available for viewing. Similarly, if the user enters an identifier associated with criteria defined by that adult, only programs desired by that adult are available for viewing.

It is believed, however, that such "multiple-viewer" filtering criteria may be disadvantageous in that only one filtering criteria is active at one time (e.g., the filtering criteria for a child terminates upon entry of an identifier associated with an adult's filtering criteria). Upon termination of the adult's viewing session, the child's identifier must be re-entered to activate the appropriate filtering criteria. Failure to re-activate such filtering may allow the child to access inappropriate content. Furthermore, requiring an identifier to be entered each time a child or other viewer wishes to view video programs may be inconvenient and impractical, for example, if other guardians, such as babysitters, are present.

According to an example embodiment of the present invention, controlled access to content is provided. A default profile (e.g., a family profile) is provided which includes at least one filtering criterion (e.g., censorship criterion), the filtering criterion describing at least one of characteristics of content permitted for all of the plurality of users and characteristics of content prohibited for all of the plurality of users. Metadata associated with a selected content and the filtering criterion of the default profile are compared. The metadata includes information related to the selected content.

Access to (including, e.g., rendering of) the content is permitted or denied based on the comparison.

A content player is also provided. The player may include, for example, a memory device storing a default profile, the default profile including at least one filtering criterion, the filtering criterion of the default profile describing at least one of characteristics of content permitted for all of the plurality of users and characteristics of content prohibited for all of the plurality of users. The player may include a processor configured to compare metadata associated with selected content and the filtering criteria of the default profile, the processor configured to permit or deny rendering of the selected content based on the comparison.

In another example embodiment according to the present invention, a method to control access to content is provided which includes selecting content, the selected content having metadata linked thereto via a pointer. The metadata is obtained using the pointer. The metadata and at least one filtering criterion are compared, the filtering criterion describing characteristics of at least one of permitted content or prohibited content. Access to the selected content is permitted or denied based on the comparison. The pointer may be embedded, for example, in a Vertical Blanking Interval (VBI) of a signal of the selected content. The pointer may be a URL, and the metadata may be obtained over the Internet using the URL.

In another example embodiment, a content player accessible to a plurality of users is described. The player may include, for example, a memory device storing at least one filtering criterion, the filtering criterion describing characteristics of at least one of permitted content and prohibited content. The player may also include a processor configured to obtain a pointer to metadata associated with selected content, obtain

the metadata using the pointer, compare the metadata to the filtering criteria, and to permit or deny rendering of the selected content based on the comparison.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 illustrates an exemplary Account Manager Screen according to the present invention.

Figure 2 is a block diagram showing an operational sequence for comparing content and profiles according to the present invention.

Figure 3 is an example login screen.

Figure 4 is another example login screen.

Figure 5 is an example player system.

Figure 6 is another example player system.

DETAILED DESCRIPTION

Profiles: In accordance with example embodiments of the present invention, access to content (e.g., audio and/or video data or programs) is controlled through the use of a profile system. In one embodiment, profiles are created for users of a content player system. Each of the profiles may describe content that is acceptable (e.g., permitted) to be played (e.g., rendered/displayed) to a group of users or individual users.

Default Profile: In one example embodiment, a default profile (e.g., a "family" profile) may be provided which describes or defines filtering (e.g., censorship) criteria for determining which content may be made available to all users of a content player system. The default profile may describe, for example, content (e.g., video programs) or characteristics of content

which are acceptable or "safe" for all users of the system (e.g., all members of a family). Content that meets the criteria may be played by any users of the system without requiring the user to login. For example, the default profile may permit access to all content having a specific rating, for example, "G" or "PG". In the example embodiment, the Default Profile is "active" without requiring a user to provide user information (e.g., without requiring a user to log in to the system or provide identification information).

User Profiles: In the example embodiment, individual user profiles may be provided which defines filtering criteria for determining which content may be made available to particular users of the system. By creating separate user profiles, specific users of the system may be granted access to content other than that described in the default profile. For example, if the default profile permits all users of the system to access G rated profiles, a user profile for a user such as a teenager may permit access to content with an "R" rating. Another user profile may be provided for a parent which permits access to all content. Activation of one of these individual user profiles may require a user to login with a userid and/or password or provide other identification information.

Filtering criteria: The filtering criteria defined in the default and user profiles may contain an aggregate of various filtering criteria. The filtering criteria may include rules which describe content permitted to be played or content which should not be permitted to be played back based on ratings information, actors, directors, program type or genre, channel/source, synopsis, keywords, etc.:

Ratings:	"Allow programs with ratings of G, PG, PG-13;" "Prohibit programs with rating of X"
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Actors: "Prohibit programs featuring these
specific actors . . ."

Director: "Prohibit programs by these specific
directors . . . "

Program Type: "Prohibit programs classified as
'horror'"

Channel/source: "Prohibit programs from the following
channels . . .;" "Prohibit programs from
the following Web sites . . ."

Synopsis: "Prohibit programs dealing with the
mafia or drug dealers."

The filtering criteria may be flexible, allowing specific combinations of criteria:

Content Advisories override MPAA Rating:

"Even though the user is permitted to view R-rated programs, prohibit programs having explicit sexual scenes or nudity."

Program Type overrides Synopsis:

"Prohibit programs whose synopsis mentions 'prisons' except for programs that are classified as 'Documentary.'"

In one embodiment, the filtering criteria is not specific to a particular content (program), although in another embodiment, filtering criteria may be provided in which specific content is prohibited (or permitted).

Account Manager: In accordance with an example embodiment of the present invention, an *Account Manager* system may be provided to create and modify the Default Profile and the User Profiles. In this embodiment, only authorized users may create/modify profiles. For example, before being permitted to create or modify any of the profile, a user may be required

to log into the Account Manager system with a userid and/or password.

After logging into the system, the user may create and/or modify profiles using, for example, a graphical user interface. Figure 1 shows one example of a screen for configuring a profile. Here, the user may select appropriate filtering criteria for a particular User Profile (in this case for user "Jamie" or for the Default Profile. For example, the user may select acceptable MPAA and TV ratings by selecting (via an input device such as a mouse, keyboard, keypad, etc.) the appropriate check box. Also, the user may select acceptable content advisories, and may input blocking criteria. A username and password may be associated with each of the individual User Profiles.

The Account Manager system may also allow an authorized user to change various system settings. For example, the content player system may set to default to the Default Profile. After a User Profile is activated (e.g., by a user logging in), the system may automatically revert back to the Default Profile after a program is viewed.

Content: The content may be transmitted or provided to users by any means. For example, the content may be transmitted to the users via a cable television network, a satellite network, a video-on-demand network, a pay-per-view network, and a web-based network, broadcast, multicast, and point cast. The content may also be provided to users on removable media such as CDs, DVDs, tapes, EEPROM, etc.

Metadata: In accordance with an example embodiment of the present invention, metadata is associated with content to describe the subject matter of the content, or describe information associated with the content. For example, each program may have a metadata file associated therewith (Program

Metadata File, "PMF"), which contains information about the program. The PMF may be in an XML format to allow for easy expansion for evolving control criteria, but other formats are possible. The following is a list of examples of types of information that may be stored in the PMF (other types of information are possible):

MPAA Rating - G, PG, PG-13, R, X, NR, etc.

Content Advisory - Explicit sexual scenes,
violence, nudity, strong language, drug use,
non-heterosexual encounters, etc.

Actors - A list of key actors.

Director - The program's director.

Synopsis - A description of the plot, etc.

Any other relevant information regarding the
content (program).

The metadata for each program or content may be associated with the content in a number of different ways. The metadata may be associated with the content by providing a pointer to an XML file. The pointer may be, for example, an address, a file name or location, a URL, or an ID. The pointer may be embedded in the content, or may be provided separately from the content (e.g., in a table or separate file). In one embodiment, the pointer is encoded in the Vertical Blanking Interval ("VBI") of a television signal carrying the content. In another embodiment, the pointer is appended, prepended or inserted in/to the content. In yet another embodiment, the content is provided on a removable medium (e.g., CD, DVD, flash memory, floppy disk, magnetic tape, etc.) and the pointer is also stored on the medium, e.g., in a particular track, at a predetermined address, or predetermined location.

In one embodiment, in which the pointer is a URL, a content player retrieves the metadata over the Internet using the URL.

In another embodiment, the metadata is associated with the content by appending, prepending, inserting the metadata itself to/into the content. The metadata itself may be encoded in a VBI of a television signal carrying the content. The metadata may also be stored in file having a predetermined name, or may be stored at a predetermined location or address.

In connection with a Web-based content player, a PMF associated with the content may be embedded in a track of an MPEG4 file. Alternatively, a URL may be provided in a content header which the player uses to retrieve an associated PMF via HTTP or another protocol. With respect to a DVD disk, the metadata may reside on the disk, for example, in a PMF with a standard name (e.g., "program_metadata.xml"), or may be at a particular location on the disk. With respect to cable or satellite broadcast of the content, a URL, for example, may be embedded in the VBI of the broadcast. The URL may identify a location on the Internet at which the associated metadata reside, so that a settop box may retrieve the metadata.

Profile Checking: In accordance with an example embodiment of the present invention, a player or playback mechanism is provided which controls playing (e.g., rendering/displaying) of content in accordance with the Default Profile and the User Profiles. Referring now to Figure 2, there is seen an example operation sequence for performing the control. In step 210, the user attempts to access the content (e.g., the user selects the content). In step 220, the player obtains the metadata associated with the content. Examples of possible locations of the metadata is described above. The player can obtain the metadata in a number of ways, depending, for example, on how the metadata is associated with the content. If a pointer is embedded in the VBI of a signal of the content (e.g., a television signal), the player may extract the pointer from the signal, and then retrieve (e.g., read) the metadata data using the pointer. If the pointer is a URL, the

player may obtain the metadata over the Internet using the URL. As described above, a pointer may be embedded or stored in other locations. Alternatively, the metadata itself may be encoded in the VBI or in the content (including prepending, appending, embedding, etc.); or the metadata may be stored in a known location. Thus, the player may simply read the metadata.

The player then compares, in step 230, the filtering criteria in the Default Profile to the metadata to determine whether or not the content meets the criteria. For example, the player determines if the content is "safe" for all users. If the content "passes" or meets the filtering criteria, the content is played for the user.

If the content does not meet the filtering criteria in the Default Profile (i.e., the content fails the check), the user is alerted that a login is required to access the content (step 240). Thus, the player provides the user with a screen via which the user may log. Figure 3 shows one example screen in which the user provides a Username and Password. Figure 4 shows another example using a pulldown menu of all users. In connection with Figure 4, once the username is selected, the user then provides a password. If the user does not provide a valid username and password (see step 250), the player may again ask the user to log in (step 240).

If the user provides a valid username and password, the filtering criteria associated with a User Profile associated with the username and password is compared with the metadata of the content (step 260). If the content meets the filtering criteria, access to the content is permitted and the content is played (step 270). Otherwise, the user is presented with a failure message and the user is not permitted to access the content (step 280).

The player system may then automatically revert back to the Default Profile. That is, when the user attempts to access other content, the player system may again start the operations of Figure 2, including requiring the user to log in if the content does not conform to the Default Profile. In another embodiment, the filtering criteria associated with the current User Profile remains in user for a predetermined length of time, a predetermine number of programs, etc. Thus, the same user may play consecutive programs without the need to log in again. Whether or not the system "reverts" to the Default Profile may depend on setting established by authorized users using the Account Management system.

Example Systems: Figure 5 shows an example player mechanism 500 in accordance with an example embodiment of the present invention. In this embodiment, the player mechanism 500 includes a processor 510 which, for example, executes the Account Management system and the profile checking system. A storage medium 520 (e.g., an internal hard disk or other non-volatile memory) locally stores, for example, Account Management information including system software, system settings, the Default Profile and User Profiles (in another embodiment, some or all of this information may be stored remotely). Content associated therewith may be stored on storage medium 520, or may be stored on an additional storage medium 525. The additional storage medium 525 may be a removable medium such as a CD, DVD, flash memory (e.g., a memory stick), magnetic tape, etc. Alternatively, the medium may be a fixed medium such as an internal hard disk. A pointer to the metadata associated with the content and/or the metadata itself may be available as discussed above.

The player mechanism also includes an input device 530 for allowing user input. The input device 530 may include a keyboard, mouse, trackball or any other type of input device.

The player mechanism also includes a display/rendering device 540. In one embodiment, the display/rendering device includes a video output and/or an audio output for displaying/rendering permitted content.

Figure 6 shows an example system in accordance with another embodiment of the present invention. In this example, a content provider 105 is connected to settop boxes 115a-115n via a network 110. The content may include, for example, a television station, an Internet provider, a cable broadcast system, a satellite broadcast system. The network 110 may be a wired or wireless network, and may include a cable television network, satellite television network, a video-on-demand (VOD) network, a pay-per-view (PPV) network, and/or a Web-based network. Alternatively, the content provider 105 may provide broadcast, multicast or pointcast programming which a user can receive via an antenna. The settop boxes 115a-115n are coupled to rendering/display devices 120a-120n such as televisions. In this embodiment, the Account Management system and profile checking system may reside in the settop box. The settop box may include, for example, a processor and storage devices such as those described above in connection with Figure 5. The content provider 105 provides content to each user via the settop boxes 115a-115n.